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of Transportation
**Federal Aviation
Administration**

General Aviation Airworthiness Alerts

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DECEMBER 1996**

**Improve Reliability-
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CONTENTS

SPECIAL NOTICE

VARIOUS AIRCRAFT COMPONENTS IMPROPERLY OVERHAULED/REPAIRED	1
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AIRPLANES

AEROSPATIALE	2
BEECH	2
CESSNA	5
ERCOUPE	8
MOONEY	8
PIPER	8

HELICOPTERS

AEROSPATIALE	11
AGUSTA	11
AMERICAN EUROCOPTER	11
BELL	12
ENSTROM	13
SIKORSKY	13

AGRICULTURAL AIRCRAFT

AIR TRACTOR	13
-------------------	----

AMATEUR, EXPERIMENTAL, AND SPORT AIRCRAFT

BD-4	14
BURKHART GROB	14

PROPELLERS AND POWERPLANTS

ALLISON	14
TELEDYNE CONTINENTAL	15

ACCESSORIES

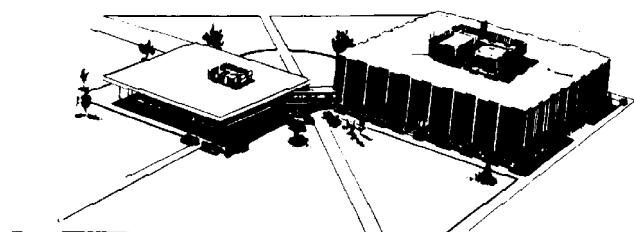
MARVEL-SCHEBLER CARBURETOR FAILURE	15
EASTERN AERO MARINE	15

AIR NOTES

AIRWORTHINESS DIRECTIVES	16
ALERTS ON LINE	17
HAPPY HOLIDAYS	18
FAA FORM 8010-4, MALFUNCTION OR DEFECT REPORT	19
SUBSCRIPTION REQUEST FORM	19

**U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION
WASHINGTON, DC 20590**

GENERAL AVIATION AIRWORTHINESS ALERTS



FLIGHT STANDARDS SERVICE
Mike Monroney Aeronautical Center

The General Aviation Airworthiness Alerts provide a common communication channel through which the aviation community can economically interchange service experience and thereby cooperate in the improvement of aeronautical product durability, reliability, and safety. This publication is prepared from information submitted by those of you who operate and maintain civil aeronautical products. The contents include items that have been reported as significant, but which have not been evaluated fully by the time the material went to press. As additional facts such as cause and corrective action are identified, the data will be published in subsequent issues of the Alerts. This procedure gives Alerts' readers prompt notice of conditions reported via Malfunction or Defect Reports. Your comments and suggestions for improvement are always welcome. Send to: FAA; ATTN: Maintenance Support Branch (AFS-640); P.O. Box 25082; Oklahoma City, OK 73125-5029.

SPECIAL NOTICE

VARIOUS AIRCRAFT COMPONENTS IMPROPERLY OVERHAULED/REPAIRED

Main Fuel Pump Gears and Anti-Ice Shutoff Valves

The following notice was submitted by the FAA's Avionics Systems & Repair Stations Branch (AFS-350) and the Allentown, Pennsylvania Flight Standards District Office (ABE FSDO). (This article is published as it was received, except for editorial changes.)

This is to inform you that the Federal Aviation Administration (FAA) investigation of Aerosource, Inc.; 360 Campus Drive; Somerset, New Jersey; (a certificated repair station, certificate number FK1R142K), revealed that some

components were returned to service after undergoing maintenance when they did not meet the manufacturer's specifications. Testing and disassembly of selected components revealed that they did not conform to the manufacturer's technical data for maintenance.

The following components should be suspected as improperly maintained until further evaluations are performed:

a. Main Fuel Gear Pumps, TRW Inc., and Argo-Tech Model Numbers 243600, 358200, 371900, and 378200; to include Part Numbers 243601 (all dash numbers), 358201 (all dash numbers), 371901 (all dash numbers), and 378201 (all dash numbers); and

b. Whittaker Anti-Ice Shutoff Valve, Part Number 320115, installed on but not limited to DC-9, MD-80, B-727, C-9, KC-10, and L-1011 aircraft and engines.

These components may be subject to early failure due to improper maintenance.

Aerosource, Inc., was found to have a system, whereby some components may have been returned to service without adherence to the manufacturer’s specifications.

Based on this information, the FAA also has concerns that other aircraft components may not have been properly maintained by Aerosource, Inc.

It is recommended that appropriate action be taken to determine if aircraft components, identified as being maintained by Aerosource, Inc., for use on aircraft, meet all applicable requirements.

Additional information may be obtained by contacting the ABE-FSDO. The address is: FAA; ATTN: ABE-FSDO; 961 Marcon Blvd., Ste. 111; Allentown, PA 18103. The telephone number is (610) 264-2888, and the FAX number is (610) 264-3179.

contained in Title 14 of the Code of Federal Regulations (14 CFR) part 43, appendix D. The worksheet was used as a “standardized form” for all 100-hour/annual inspections performed on various make and model aircraft.

The manufacturer’s inspection guide, contained in the maintenance manual, requires an inspection/check of the “compensating actuators.” The actuators are mounted on the nose landing gear, and they are essential during an emergency landing gear extension. The maintenance manual contains procedures for actuator inspection. An investigation of the incident indicated a defect existed in one of these actuators. When a landing gear operational test was conducted without following the procedures specified in the manufacturer’s inspection worksheet, the defect was not revealed. If the procedures in the maintenance manual had been followed, the defect would have been discovered before the incident. This inspection checklist must be developed in accordance with the following: 14 CFR part 43, section 43.15 and the performance rules of section 43.13; and the methods, techniques, and practices prescribed in the current manufacturer’s maintenance manual.

Maintenance personnel performing inspections should keep in mind that the checklist used for 100-hour/annual inspections should cover all of the systems on the aircraft being inspected. There is no substitute for reading the maintenance manual and learning how the system works. It is far better to spend some time preparing for the task than to spend a lot of time afterward explaining what happened.

AIRPLANES

AEROSPATIALE

**Aerospatiale
Model TB-20
Trinidad**

**Emergency Nose
Landing Gear
Extension Failure
3230**

A recent landing incident has brought up a problem which FAA-certified Inspection Authorization (IA) holders and certified repair stations should be aware of when they are performing 100-hour/annual inspections. The nose landing gear failed to extend by both normal and emergency means.

This incident occurred shortly after an annual inspection. The IA, who performed the annual inspection, used a locally generated worksheet designed to cover the scope and detail of items

BEECH

**Beech
Model C23
Sundowner**

**Cockpit Fuel Odor
2842**

The aircraft owner reported detecting a fuel odor in the cockpit.

An investigation determined the left and right fuel quantity transmitters (P/N's 169-380066-3 and -4) were leaking. The transmitters were located in the wing root area on either side of the fuselage. The fuel appeared to emanate from the center post of the transmitter. The submitter speculated the internal transmitter seals were the cause of this defect.

Part total time-2,432 hours.

**Beech
Model G35
Bonanza**

**Instrument Panel
Structural
Compromise
5330**

It was found during a scheduled inspection that the top portion of the fuselage skin extending from the windshield line aft to the instrument panel had been previously removed and re-installed.

The submitter speculated this skin section had been removed to facilitate installation of a one-piece "speed slope windshield." This skin section provides structural strength and support for the instrument panel and the shock-mounted subpanel. Because of the removal of this skin section, the top of the instrument panel had little fore and aft support remaining. The entire panel was "weakly" supported by a channel running along the bottom of the panel and attached to the left and right sidewalls. When the flight control column was moved up and down, the entire instrument panel flexed approximately .5 inch. It was recommended that only an FAA-approved modification be accomplished in this area to ensure the structural integrity of the instrument panel installation is not compromised.

Part total time not reported.

**Beech
Model C-45H
Mentor**

**Elevator Flutter
2730**

The pilot reported experiencing severe elevator flutter during flight. A safe emergency landing was made and the aircraft was delivered to maintenance.

The elevator hinge attachment point was damaged due to the violent action of the control surface. The left elevator trim tab actuator had been torn loose and was missing. The fabric covering on this aircraft was "very old" and had numerous repairs. It seems obvious from this report the fabric covering on this aircraft suffered from long term neglect. This type of condition is easily eliminated along with the hazards it presents to flying safety.

Part total time-15,999 hours.

**Beech
Model 58TC
Baron**

**Landing Gear
Malfunction
3230**

Information for this article was submitted by the FAA's Aircraft Certification Office (ACO) located in Wichita, Kansas.

FAA Safety Recommendations 96-212 and -213 were received describing the circumstances involved in a main landing gear malfunction.

The landing gear hung during transit. An investigation revealed the cause was the downlock support assembly (P/N 60-810083-2) attachment point was worn. This allowed the support assembly to move laterally while the gear was moving, and the gear hung on the leg (P/N 60-810028-17). It appears this discrepancy is related to leg serial numbers TK1 through 96 and to leg (P/N 60-810103-1) serial numbers TK97 and subsequent. With the landing gear leg at a 45 degree angle, the downlock support assembly should be inspected for lateral movement. If part replacement is necessary, consult the manufacturer's maintenance manual.

Part total time not reported.

**Beech
Model 58
Baron**

**Elevator Hinge
Wear
5552**

During an annual inspection, the maintenance technician discovered the left inboard elevator hinge bushing was excessively worn.

The inner race of the bushing (P/N MS27261KSP4) was worn to the point of allowing the elevator additional movement past the normal range of travel. Concerning the aircraft flight characteristics, the pilot stated the empennage "would shudder" while landing. The "shudder" stopped when the bushing was replaced.

Part total time-3,487 hours.

Beech
Model 95-C55
Baron

Engine Oil Filter
Failure
8550

During a routine engine oil change, an examination of the oil filter (P/N CH48109) revealed the gasket had shifted.

The rubber gasket, which is used between the filter element housing and the engine housing, was covering approximately 75 percent of the oil inlet port and 100 percent of the two outlet ports. This caused engine oil to bypass the filter allowing unfiltered oil to circulate through the engine. It would be wise to conduct a thorough receiving inspection as well as checking the oil filter at the time of installation.

Part total time-84 hours.

Beech
Model C-90A
King Air

Wheel Brake
Assembly Crack
3242

A wheel brake assembly guide pin bushing was found loose on the left main landing gear during a scheduled inspection.

A "wide" crack was found in the brake torque plate (P/N 075155-00) after disassembly and cleaning of the brake assembly. The crack was located at the guide pin bushing hole. This was a Parker Hannifin brake assembly, and it had been installed in accordance with Supplemental Type Certificate (STC) SA619GL. The cause of this failure was not determined. This area should be given special consideration during inspections and maintenance.

Part total time-1,767 hours.

Beech
Model E-90
King Air

Main Landing Gear
Failure
3213

The pilot reported an aborted takeoff because of (what seemed to be) a tire failure on the right main landing gear. The aircraft was stopped on the runway, and maintenance personnel were summoned.

An inspection revealed the right main gear upper torque knee was broken at the pivot point which is adjacent to the lower torque knee attachment. The wheel assembly "spun" around, and approximately half of the tire tread was torn from the tire. The cause of this failure could not be determined. This area should be checked for cracks and other defects at every opportunity.

Part total time-7,522 hours.

Beech
Model B200C
King Air

Cabin Door
Structural Failure
5210

The flightcrew reported observing light through the hinge area of the cabin door (P/N 101-430142-53).

The door was cracked just above the hinge attachment, and the crack was approximately 10 inches long. This area should be thoroughly inspected at every opportunity, especially on high time aircraft. In this case, it was necessary to replace the cabin door.

Part total time-5,877 hours.

Beech
Model 300
King Air

Tire Failure
3244

The pilot reported an abnormal vibration during the takeoff roll.

An investigation revealed a nose landing gear tire (P/N 301393-190) was severely out of balance. The tire was removed, and the "balance patch" was found loose inside the tire. The submitter speculated that high ramp temperatures caused the failure of the balance

patch adhesive. The tire manufacturer was not identified.

Part total time not reported.

**Beech
Model 400A
Beechjet**

**Damaged
Emergency Landing
Gear Release Cable
3230**

The right main landing gear emergency release cable was found kinked and frayed during a scheduled inspection.

The damage was adjacent to the uplock mechanism. The submitter stated: "Excessive slack in the cable allowed the cable end to bend in excess of 90 degrees. This caused the cable to kink and create memory which allowed the cable to repeat this motion each time the landing gear was cycled." Failure of this cable would prevent emergency extension of the right main landing gear. The submitter suggested the manufacturer issue a larger diameter cable for this installation, or a 360-degree cable guide, to prevent recurrence of this defect.

Part total time-731 hours.

CESSNA

**Cessna
Model 150H
Commuter**

**Wing Flap Failure
2750**

Information for this article was submitted by Mr. Wilbert Robinson, an Aviation Safety Inspector with the FAA's Flight Standards District Office (FSDO) located in San Jose, California.

The pilot reported the wing flaps stuck at 40 degrees during a "go-around." An emergency landing was made; however, the landing resulted in substantial damage to the aircraft.

An inspection disclosed the electrical fuse was "blown" and both ends were heavily corroded. The fuse was bonded to the fuse holder by corrosive action. Additionally, the fuse installed was a "20 Amp Fast Blow-type." The

maintenance manual calls for a "15 Amp Slow Blow-type" fuse.

The submitter recommended the manufacturer revise the inspection section of their maintenance manual. The manual should require removal of the fuses and inspection for corrosion and proper type during scheduled inspections.

Part total time not reported.

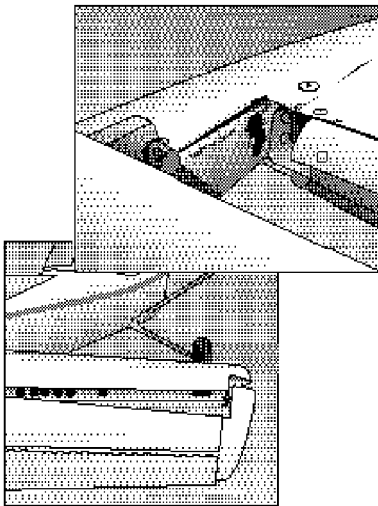
**Cessna
Model 150L
Aerobat**

**Elevator Failure
5552**

This aircraft was being used for flight instruction. The student pilot informed the flight instructor, that during the flight, the elevator "did not feel right." The elevator system problem was not reported or entered into the maintenance records, and no action was taken. The next day, the right elevator hinge bracket failed completely during a student pilot solo flight. Although extreme difficulty was experienced in maintaining control of the aircraft, a safe landing was made.

The right elevator did not separate from the aircraft. (Refer to the following illustration.) While investigating the cause of this failure, the bushing (P/N 0432003-1) used for rotation of the parts was found conical shaped. The submitter speculated this was due to "wear and age." The small conical shaped area caused the end of the bushing to cut into the hinge brackets, causing the hole to elongate. The submitter suggested closer attention be given this area during scheduled and preflight inspections. In addition, the elevators should be removed each 1,000 hours for examination of the bushings for unusual wear patterns and/or corrosion. The hinge brackets should be checked for wear and the elevator spar for cracks. Proper lubrication of this area is vital to proper operation. This defect should have been discovered during preflight inspection. Slight hand pressure applied to the elevator surface in a "wiggling" motion would have revealed this dangerous problem.

Part total time-7,706 hours.



they were riveted was cracked in two places. The cracks appeared to radiate from a fastener hole. When complying with an AD, it is a very good idea to thoroughly inspect the surrounding area for related (or unrelated) defects.

Part total time-7,297 hours.

**Cessna
Model 170B**

**Bulkhead Crack
3221**

The rear bulkhead was found cracked at the point where the tailwheel mounting bracket was attached.

The bulkhead skin was found to have multiple cracks on both sides of the tailwheel mounting bracket.

When the mounting bracket was removed, there was severe corrosion between the bracket and the bulkhead skin. The submitter speculated this defect was caused by corrosion that reduced the skin thickness. It was stated: "The old-style tailwheel bracket is steel, and the new one is aluminum." The possibility of dissimilar metal corrosion should be reduced by the installation of an aluminum bracket. Contributing factors for this failure may have been the operating time and/or the age of this part (approximately 44 years).

Part total time-3,050 hours.

**Cessna
Model 177RG
Cardinal**

**Fuel Leak
2820**

The pilot reported a total loss of fuel pressure during an aftertakeoff climb. The aircraft was delivered to maintenance after an uneventful emergency landing.

An inspection revealed the fuel pressure hose (P/N S1236C3-0420), which runs from the firewall to the fuel flow divider, was leaking profusely. The hose was leaking at the socket which threads to the hose end. The submitter stated: "This hose was purchased from Cessna on 8/93 and installed when received. The metal identification band on the hose had an assembly date of 4/85." It was recommended

**Cessna
Model 152
Aerobat**

**Carburetor Heat
Valve Security
7322**

The carburetor heat "butterfly" valve (P/N 0450070-5) was found loose during an annual inspection.

The two screws used to secure the valve plate to the shaft were removed and found to be worn through approximately 80 percent of their diameter. It appeared to the submitter the screws had been loose and "working" for some time. Failure of these screws could cause loss of engine power by severely restricting airflow and ingestion of the screws.

Part total time-5,047 hours.

**Cessna
Model 152
Aerobat**

**Empennage
Attachment Bracket
Defect
5500**

In accordance with Airworthiness Directive (AD) 80-11-4, the bracket was discovered cracked while the horizontal to vertical stabilizer attachment fitting nut plates were being inspected.

The nut plates referred to by AD 80-11-4 were not cracked; however, the bracket to which

that all suppliers of aircraft equipment should review their policy on shelf-life items, including hoses.

Engine compartment fuel leaks present a situation which is potentially catastrophic and a severe hazard to flying safety.

Part total time 299 hours.

Cessna	Elevator Trim
Model A185F	Failure
Skywagon	2731

The pilot reported that just after takeoff, the elevator trim control was lost, and it was difficult to maintain a level attitude.

An inspection of the system revealed the roll pin (P/N NAS 561-3-8), which was used to secure the elevator trim system shaft (P/N 0761205-9) to the chain sprocket, was sheared. This allowed the shaft to rotate inside the sprocket. After the shaft was removed, the hole for the roll pin was found elongated. Any binding in the elevator trim system induces excessive stress on the roll pin. Shearing this roll pin creates a potentially dangerous situation; however, a safe landing was made. The location of the roll pin makes proper inspection difficult; however, rocking the trim control wheel back and forth should give an indication of roll pin looseness or shaft wear. This operator has discovered similar failures and shaft wear on several other aircraft.

Part total time-2,575 hours.

Cessna	Landing Gear
Model 414A	Emergency Down
Chancellor	Plumbing Failure
	3230

The nitrogen line (P/N 5100111-6) of the emergency landing gear system ruptured when the system was activated during a scheduled inspection.

An examination of the ruptured nitrogen line revealed corrosion was present and had compromised the line wall thickness. There

was no corrosion on the line except where it made contact with the heat duct in the nose baggage compartment. Corrosion was also found on the heat duct at two points where it passed through the nosewheel well and made contact with the aluminum structure.

Part total time-4,900 hours.

Cessna	Landing Gear
Model 414A	Failure
Chancellor	3230

The pilot reported the landing gear failed to retract after takeoff. A safe landing was made, and maintenance personnel were summoned.

An investigation disclosed the nose gear wiring harness had been torn loose from the microswitch (P/N 1CH1-6). This switch was mounted on the nose gear actuator (P/N 9910139-3). The submitter stated a "Tyrap," used to secure the wiring harness, was found broken. During the attempted landing gear retraction, the wiring harness was "snagged" by the nose gear door bellcrank. An operational test indicated all three landing gear were functioning normally after replacing the nose gear actuator. The aircraft had flown 44 hours since the last scheduled inspection. The submitter suggested more attention be given to wiring harness security during scheduled inspections.

Part total time not reported.

Cessna	Defective Landing
Model 560	Gear Warning Horn
Citation	3260

The landing gear warning horn failed to operate properly during a preflight inspection.

The warning horn sounded when each throttle was retarded separately; however, it failed to sound when both throttle levers were retarded together. After extensive troubleshooting, the pitot static differential pressure switch (150 knot airspeed switch) (P/N D37C15) was found to have higher than normal internal resistance. The warning horn system tested normal after this switch was replaced.

The cause of high internal resistance in the switch was not determined.

Part total time-1,277 hours.

ERCOUPE

**Ercoupe
Model 415C**

**Wing Corrosion
5711**

The upper wing spar cap on both wings was severely corroded.

This problem was discovered while preparing wings for fabric replacement. Several layers of various types of old tape applied to the spar caps hid, and probably promoted, propagation of the corrosion. The corrosion of the spar caps had progressed to the point of exfoliation and delamination of the metal. The area of damage covered the full length of the spar caps and varied in depth to a maximum of .0625 inch. The cause of this defect was not eluded to by the submitter; although, it was suspected the tape held water and other contaminants in contact with the spar caps.

Part total time-1,938 hours.

MOONEY

**Mooney
Model M20J
201 Lean Machine**

**Defective
Vernatherm Valve
8550**

The pilot reported that after approximately 20 minutes into a cross-country flight, the oil temperature indicated "full hot." All attempts to lower the oil temperature failed, with the exception of reducing engine power to idle. A safe return and landing at the departure airport was made.

The Vernatherm valve (P/N 53E19600) was removed and found defective. When it was checked in hot water, the valve would only open partially then would close immediately after being removed from the hot water. There were traces of oil coming from the sealed chamber of the valve. A new Vernatherm valve

(P/N 53E22144) was installed, and the oil temperature problem was solved.

There were 51 entries found during a search of the FAA's Service Difficulty Reporting (SDR) program data base concerning the old valve (P/N 53E19600). A search of the new valve (P/N 53E22144) did not generate any reports.

Part total time-320 hours.

PIPER

**Piper
Model PA12
Super Cruiser**

**Engine Mount Crack
7120**

The lower left engine mount tube was found cracked during an annual inspection.

The crack was located adjacent to the engine mounting flange. This aircraft had a Textron Lycoming, Model O320-C2A, engine installed in accordance with Supplemental Type Certificate (STC) SA 4-456. It was determined the reinforcement tubing, required by the STC, had not been properly installed. It did not extend the full length of the lower tube.

Part total time-3,485 hours.

**Piper
Model PA 23-250
Aztec**

**Nose Landing Gear
Damage
3230**

The pilot reported that after a normal landing, the landing gear warning horn sounded while taxiing to the parking area. At the same time, the green nose gear indicator light extinguished. The aircraft was stopped, and maintenance personnel were summoned.

An inspection of the nose gear revealed the bolt (Piper P/N 400-235), which secures the upper drag link to the airframe, was cracked and had partially shifted from its original location. Also, the attachment fittings which connects the upper drag link to the airframe were cracked and partially twisted from their original position. These fittings were constructed of 4130 steel. Closer examination of the bolt indicated the initial stress, which

produced the crack, occurred at a time prior to this failure. The submitter stated: "It appears likely that the initial damage may have been the result of some abusive towing operations."

This is not an area that lends itself to easy inspections. It was recommended that close attention be directed to this area during scheduled inspections, especially when "abusive towing operations" have been encountered or on high time aircraft.

Part total time-8,500 hours.

**Piper
Model PA 24-260
Comanche**

**Flight Control
Interference
2700**

The owner/pilot of this aircraft had installed a control yoke mounted clamp designed to attach a portable Global Positioning System (GPS). The pilot discovered during a landing approach that aft movement of the control column was restricted. The electrical power wire harness to the GPS mount had become entangled. The wire harness broke under extreme pressure from the pilot just before touchdown. This allowed the aircraft to be flared; however, the aircraft landed hard.

It would seem this occurrence resulted from a combination of many things which were not properly accomplished. First of all, the installation should have been checked for any possibility of interference or entanglement with other aircraft systems. Second, the pilot should have checked the flight controls for full travel and freedom of movement as a part of the checklist. Third, although it may have been legal for the owner to install this equipment, if there is any doubt, the installation should be inspected by a qualified person. This is a good idea for all to follow.

Part total time is not applicable.

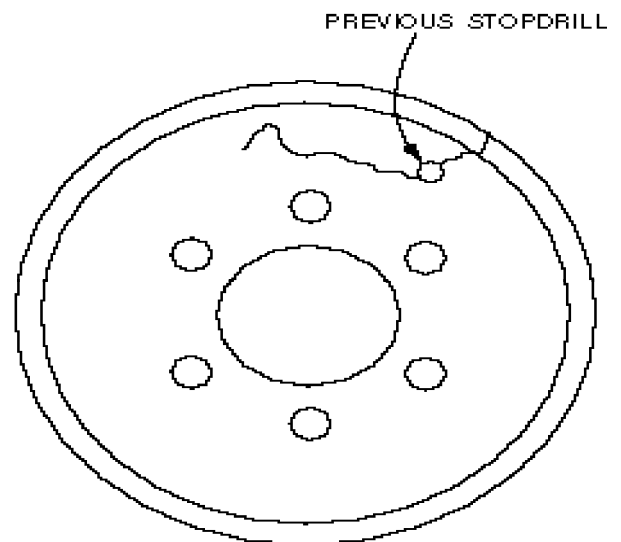
**Piper
Model PA 28-151
Warrior**

**Cracked Propeller
Spinner Bulkhead
6113**

The propeller spinner bulkhead was found cracked during an annual inspection.

This cracked existed for some time as evidenced by a "stop drill hole" from which the crack had continued. (Refer to the following illustration.) The cause of the initial crack could not be determined; however, it continued because of "improper stop drilling." The spinner bulkhead (P/N 35323-12) was no longer serviceable and had to be replaced. Before any repairs to this area are accomplished, the manufacturer's technical data should be consulted.

Part total time-1,700 hours.



**Piper
Model PA 28-151
Warrior**

**Erroneous Fuel
Quantity Indication
2840**

After filling the fuel tanks, the aircraft owner discovered the fuel quantity indicated "zero."

Maintenance technicians found the fuel quantity sending unit float detached from the wire lever arm and floating in the fuel tank. The hole in the float through which the lever arm wire passed was torn. This allowed the retaining washer to pass through, dislodging the float.

Part total time-7,466 hours.

Piper	Wing Spar Corrosion
Model PA 28-180	5711
Archer	

Severe corrosion and delamination was found on the main wing spar during a scheduled inspection.

The corrosion was located at the upper outboard fuel tank attachment points. The submitter stated this damage appeared to be the result of long term exposure to a "salt air" environment. It was suggested the fuel tanks be removed for an indepth corrosion inspection every 5 years. This aircraft was 28 years old, and approximately 22 of those years were spent operating in a salt air environment.

Part total time-2,200 hours.

Piper	Landing Gear
Model PA 31-350	Failure
Chieftain	3230

The pilot reported the landing gear would not extend using the normal system. It was necessary to use the emergency system to lower the landing gear.

A hydraulic leak was found at the left hydraulic filter assembly during an investigation. The "O-ring" seal was protruding from the filter assembly. The bowl threads were found broken when the filter was disassembled. The submitter speculated the threads of the filter bowl separated due to metal fatigue and/or overtightening. This seems very likely considering the number of operating hours on the assembly.

Part total time-17,561 hours.

Piper	Aileron Attachment
Model PA 32R-301	Fitting Loose
Saratoga	5751

During a 100-hour inspection, the left aileron was found to move with slight hand pressure after the stops were contacted.

The outboard attachment fitting (P/N 86392-02) was found loose and "working," and both bolts used to attach the fitting to the aileron were loose. There are four bolts used on each fitting. Both wings were checked, and none of the bolts had "torque seal" applied. Only minor chafing damage occurred, and retorquing the loose bolts solved the problem. Torque on all eight bolts was checked, and "torque seal" was applied. The submitter recommended that all new like aircraft have the aileron attachment fitting bolts checked for proper torque and "torque seal" applied.

Part total time-218 hours.

Piper	Cowling Hinge
Model PA 34-200	Cracks
Seneca	7110

The aircraft owner asked maintenance personnel to investigate the cause of excessive chafing and wear on both engine cowlings.

The investigation revealed the cowling was worn through by the chafing action. The cause was determined to be a cracked hinge assembly (P/N 96506-001) on both engines. The cracks were located on the forward inboard side of the left engine and the forward outboard side of the right engine. The cracked hinges allowed the side cowling to move and chafe against the upper cowling. The available evidence indicated this condition existed for many hours of operation. This area should be closely checked during scheduled inspections.

Part total time-5,990 hours.

Piper	Aileron Damage
Model PA 44-180	5751
Seminole	

During a scheduled inspection, excessive lateral play was discovered on the right aileron.

The severity of the play allowed the aileron to contact the wingtip fairing. An inspection revealed all three aileron ribs, located at the hinge points, were cracked. Inspection access to these ribs is very difficult because they are covered by the aileron leading edge skin, and no inspection panels are provided. Since this aircraft was used mostly for flight training, the submitter speculated this damage was caused by its extreme operating environment. Also, the number of operating hours may have been a factor.

Part total time-5,100 hours.

HELICOPTERS

AEROSPATIALE

Aerospatiale	Main Rotor Blade
Model AS 355F1	Crack
Twinstar	6210

A crack approximately 6 inches long was discovered in a main rotor blade (P/N 355A11-0020-09) during a scheduled inspection.

The crack was located on the lower surface of the blade approximately 4 feet and 6 inches from the root end. The crack began about 1 inch from the blade trailing edge and traveled cordwise; however, it did not meet the spar area. The cause of this defect had not been determined when this report was submitted. The submitter suggested the blades be removed before an inspection. When the blades are not removed, the blades droop; thereby, allowing the crack, on the lower side of the surface, to be hidden.

Part total time-2,578 hours.

AGUSTA

Agusta	Engine Damage
Model A109C	7230
Mark II	

The engine used in this helicopter was an Allison, Model 250C20R1.

Foreign object damage (FOD) was discovered in the right engine during a routine inspection. The axial compressor rotors and stators were severely damaged. The intake and all associated parts were found intact, and the exact source of FOD could not be determined. It would be wise for all operators to inspect their landing sites for possible FOD.

Engine total time-682 hours.

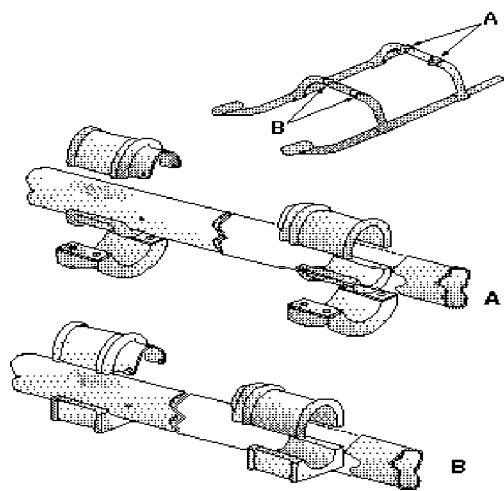
AMERICAN EUROCOPTER

American Eurocopter	Landing Gear Cross
Model AS-350B1	Tube Corrosion
Ecureuil	5344

This operator reported finding severe corrosion under the chafing strips installed on the forward-and-aft landing gear cross tubes.

After finding minor corrosion adjacent to the cross tube attachments, they were removed, exposing severe corrosion under the chafing strips. (Refer to the following illustration.) The severity of this corrosion required replacement of both cross tubes. Corrosion in these areas is usually not detectable without removal of the cross tube attachment. The submitter recommended the manufacturer revise their technical data to require removal and inspection of the cross tube attachment area during scheduled inspections. Any sign of corrosion adjacent to these fittings should be thoroughly investigated by removal of the cross tube attachment and chafe strips.

Part total time-1,948 hours.



BELL

**Bell
Model 205A1** **Main Rotor Blade
Crack Inspection
6210**

Information for this article was submitted by the FAA’s Rotorcraft Certification Office located in Fort Worth, Texas.

This Alert Service Bulletin (ASB) affects all Model 205A1 helicopters with main rotor blades (P/N 204-011-250-ALL) installed.

Bell Helicopter released ASB 205-96-67 on May 1, 1996, for the Model 204B aircraft. The ASB advised customers to perform a daily wipe-down of the upper and lower surfaces of the main rotor blades from blade station 190 to 210 and inspect for cracks in the trailing edge. At each 25-hour special inspection,

a visual inspection of the trailing edge from blade station 190 to 210 with a 10X magnifying glass is also required.

There have been recent reports of cracks in the main rotor blades on Model 204B helicopters which originate from the blade trailing edge. Since the same part number blade is used on Model 205A1, this ASB was issued. Bell Helicopter has determined the majority of these cracks appear between blade stations 190 and 210.

ASB 204-96-49 was also issued by Bell Helicopter on the same date. This ASB imposes the same requirements for all Model 204B helicopters. Refer to the specific ASB for applicability and requirements.

Any cracks found in the blade trailing edge skin is reason for removal from service.

Part total time not applicable.

**Bell
Model 206** **Defective Tail Rotor
Hangar Brackets**

A major helicopter operator submitted a report concerning “mismanufactured” tail rotor hangar brackets.

Seven of the suspected defective hangar brackets were located by this operator, after being notified by Bell. The defective tail rotor hangar brackets (P/N 206-033-412-123A) were manufactured from an incorrect material and thickness. The correct thickness is .080 inch and the incorrect brackets is approximately .100 inch. Of the seven brackets received by this operator, three were found defective. When a defective bracket is installed while the tail boom is in a fixture, it is not possible to install the alignment pins for the hangars. All

operators should be alert for detection of defective brackets prior to installation.

Part total time not applicable.

ENSTROM

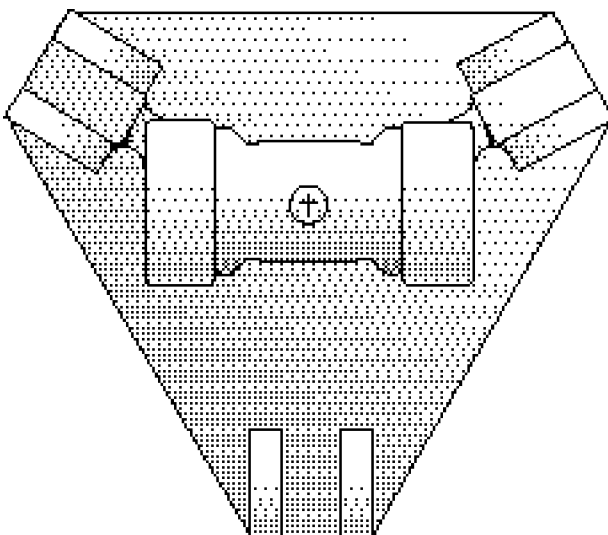
**Enstrom
Model F28F
Falcon**

**Swashplate Cracks
6230**

Cracks were found between the swashplate control rod and the universal yoke while a scheduled inspection was being accomplished.

The cracks ran down the yoke (P/N 28-16119) web at two locations. (Refer to the following illustration.) It appeared both cracks originated at the edge of a "machining line" in the metal. The cracks were observed visually and by use of nondestructive testing. The submitter stated this was the second swashplate found in 1 month with similar cracks. Both parts had accumulated approximately the same number of operating hours.

Part total time-4,393 hours.



SIKORSKY

**Sikorsky
Models S-64, CH-53,
and CH-54**

**Premature Failure
Of Tail Rotor Drive
Shaft Bearings
6510**

Information for the following article was submitted by the FAA Rotorcraft Certification Office located in Fort Worth, Texas.

The following applies to the helicopter models previously listed and operating in the restricted category for the special purpose of external loads and firefighting. External loads includes operators flying these helicopters in aerologging and heavy lifting operations. The Rotorcraft Directorate Staff has received reports that tail rotor drive shaft bearings (P/N's SB-1111-3 and SB-1111-105) are experiencing early failures and serviceability problems. The FAA recommends that operators check these bearings which are in service or in spares inventory for roughness during rotation, for low grease level, and for water contamination. In addition, the FAA is planning an engineering review of these bearings with the manufacturer.

Part total time not applicable.

AGRICULTURAL AIRCRAFT

AIR TRACTOR

**Air Tractor
Model 301**

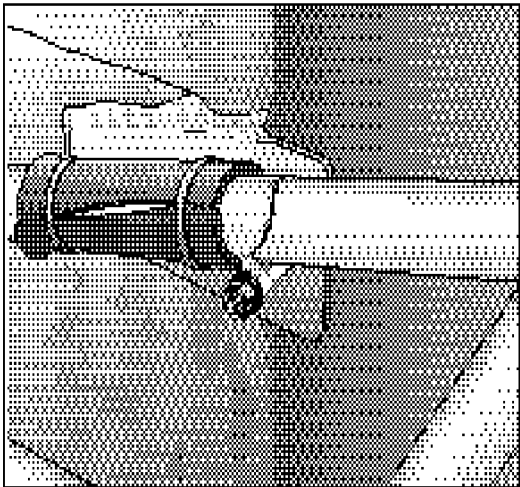
**Broken Oil Tank
Support
5345**

In the process of an annual inspection, an engine oil tank mount tube was found cracked.

The cracked tube was located at the right rear oil tank mounting point. (Refer to the following illustration.) The crack traveled around more than the entire circumference of tube in a spiral direction. A further inspection of the tube interior did not reveal any

corrosion or other cause for this defect. This area deserves close attention during scheduled inspections.

Part total time-3,673 hours.



**AMATEUR, EXPERIMENTAL, AND
SPORT AIRCRAFT**

BD-4

BD-4 Model BD-4	Rudder Structural Failure 5541
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The top rudder rib was discovered cracked during a condition inspection.

The rudder balance weight was attached to this rib in accordance with the kit manufacturer's recommendations. This rib was manufactured by the owner/builder and was constructed of .025 inch 2024 aluminum. The builder believes this material is not strong enough to hold the balance weight under flight conditions. A new rib was constructed of .032 aluminum with doublers installed. The

submitter believes this modification will improve the structural integrity of the rudder.

Part total time-270 hours.

BURKHART GROB

Burkhart Grob Model 102IIIB	Elevator Flutter Damage 5522
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The pilot reported experiencing vibration and elevator flutter in smooth air at 10,000 feet altitude and 120 knots airspeed. The airspeed "red line" for this aircraft at 10,000 feet altitude is 128 knots.

A postflight inspection revealed the elevator flutter caused multiple fractures and delaminations in the elevator skins. Also, there was separation of the inboard hinges on the horizontal stabilizer. An inspection of the elevator balance suggested that specifications in the maintenance manual may be inaccurate and/or inadequate. By design, the elevator does not have counterweights installed. The submitter stated having knowledge of other cases of elevator flutter on like model aircraft.

Part total time-1,842 hours.

**PROPELLERS AND
POWERPLANTS**

ALLISON

Allison Model 250-C30P	Turbine Outlet Temperature (TOT) Harness Wear 7250
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The turbine was being disassembled for replacement of the first stage nozzle when the TOT (P/N 6893072) probe sheaths were found with severe wear. There were also elongated holes in the third stage nozzle shield (P/N 6892832) at the point where the probes

passed through. This damage required replacement of the TOT harness.

Part total time not reported.

TELEDYNE CONTINENTAL

**Teledyne Continental Intake Valve Spring
Model TSIO-520 Failure
8530**

The Number 6 cylinder was found to have low compression during a scheduled inspection.

When the rocker box cover was removed, an intake valve spring was discovered broken. After removing the remaining rocker box covers, a total of seven broken springs was found. Each cylinder had one broken spring with the exception of the Number 5, which had two broken springs. All of the broken springs were outer springs with the exception of Number 1 cylinder where the inner spring was broken.

The submitter removed these defective parts and returned them to the manufacturer for an evaluation. All springs were replaced with new parts. In addition, it was necessary to replace the "roto caps," keepers, lifters, one intake valve, intake seals, and gaskets. The submitter did not offer a cause or cure for this damage.

Parts total time-452 hours.

ACCESSORIES

MARVEL-SCHEBLER CARBURETOR FAILURE

This article pertains to a Marvel-Schebler carburetor installed on a Piper PA 18-135 aircraft.

Engine power was suddenly lost during flight, which required an immediate emergency

landing. The emergency landing was accomplished without incident.

An investigation revealed the engine failure was caused by a defective metal float (P/N 666-915) in the carburetor. The float was found full of fuel which caused the engine fuel/air ratio to be excessively rich. The metal float had been installed as a replacement for the composite float in accordance with the manufacturer's Service Bulletin (SB) MSA-1. This installation was not affected by Airworthiness Directive 93-19-04 due to a different code stamp.

Part total time-261 hours.

EASTERN AERO MARINE

**Eastern Aero Marine Life Preserver
Models Given Below Defective Inflator
2561**

Eastern Aero Marine has discovered that some of its life preservers and individual floatation devices (IFD's), manufactured from June 1996 through September 1996, were equipped with CO2 inflators that may have had defective pivot pins installed. The pivot pin on the inflator secures the red-colored plastic actuator arm to the black-colored body. (Refer to the following illustration.) The defective pins will bend slightly when the inflator is actuated, making the inflator unable to puncture the CO2 cylinder. Therefore, the CO2 cylinder will not discharge to inflate the life preserver or IFD. The backup oral inflation system on the life preserver or IFD still functions normally.

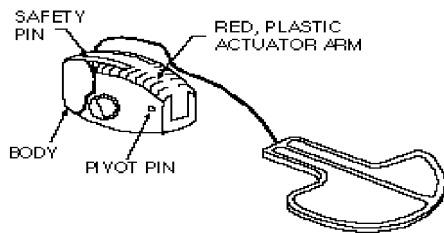
Eastern Aero Marine has issued Service Bulletin (SB) Number SBV-25-2. This SB requires the removal of inflators having black-colored plastic pivot pins on the affected life preservers or IFD's and replacing them with inflators having silver-colored metal pins.

The units affected are Eastern Aero Marine life preservers Models KSE-35L8 (P/N P0723E()), KSD-35L8 (P/N P0723-()), IN-V20L8 (P/N P0640-()), and CHD-25L8

(P/N P0620-0). Suspect IFD's are Model GA-12 (P/N P0201-105) with serial numbers A62654 through A68557, or 28403 through 60483. These units were manufactured between the dates previously given.

Eastern Aero Marine will provide replacement inflators with metal pivot pins, and there will be no charge to owners of the affected units. Owners of affected units may obtain more information by writing: Eastern Aero Marine; P.O. Box 660067; Miami Springs, FL 33266. The FAX number is (305) 871-7873. The owners should provide their name, address, FAX number, and the serial number(s) of the affected unit(s).

The SB and/or the manufacturer should be consulted for more specific information.



AIR NOTES

AIRWORTHINESS DIRECTIVES

At the suggestions of our readers, this article will appear in all future editions of this publication. It is intended to advise our readers of new Airworthiness Directives (AD's) published within the preceding month. This article is published for information only. The proper technical data should be consulted for applicability and completeness of AD data.

The following AD's include a short subject matter identification. (This article is published as it was received, except for editorial changes.)

Airworthiness Directives Published the week of October 10, 1996:

96-13-09 Jetstream 4101 bearings in starter/generator of both engines.
 96-18-08 Pratt & Whitney PW2000 turbofan engines service life limits of components.
 96-20-07 JanAero Combustion Heaters B1500 et al overhaul.
 96-20-08 Fairchild SA26, 226, 227 cockpit side windows.
 96-20-02 Airbus A300 fuselage frame cracking.
 96-20-03 de Havilland DHC-8-100 loose bolts at retract actuator.
 96-20-04 Fokker F28 1000 et al passenger door lock warning system.
 96-20-05 Boeing 767 ram air turbine.
 96-20-06 Jetstream 4101 land gear control unit.

Airworthiness Directives Published the week of October 17, 1996:

96-18-17 AlliedSignal TSCP700 APU's requires removal of high pressure turbine disks.
 96-18-22 Robinson R44 helicopters require inspection of main rotor gear box.
 96-20-02 Boeing 777-200 requires inspection of switch models on overhead panel.
 96-20-09 Jetstream HS748 requires inspection of tensioners, gust lock levers, and seals.
 96-20-10 Lockheed L-1011-385 requires inspection of canted pressure bulkhead.
 96-21-02 Bombardier Canadair CL-600-2B19 requires revising AFM.
 96-21-12 Bell 407 (priority letter) grounds rotorcraft pending completion of investigation.

Airworthiness Directives Published the week of October 23, 1996:

96-18-16 CFM International CFM 56 requires part number re-identification.
 96-21-01 McDonnell Douglas DC-9 series requires hydraulic damper assembly mod.
 96-21-03 Piper PA31 series requires inspecting inboard aileron hinge brackets.

96-21-04 Piper PA23 and PA31 series requires replacing hydraulic hoses.

Airworthiness Directives Published the week of October 30, 1996:

96-21-05 Fairchild SA226 and SA227 requires elevator torque tube installation.

96-21-06 Boeing 767 requires inspecting outer cylinder of MLG.

96-21-07 Shorts SD3-30, -60, and -Sherpa requires inspection of corroded brackets.

96-21-08 Shorts SD3-30 and SD3-Sherpa requires vertical fin-to-tail plane joint inspection.

96-21-09 British Aerospace BAE 146 and Avro 146-RJ requires inspection to detect corrosion of direction link subassembly of MLG.

96-21-10 Short Brothers SD3-60 Sherpa requires revising AFM to provide flightcrew with icing cues.

96-21-11 Piper PA31, PA31P, and PA31T requires replacing MLT actuator reinforcement bracket.

96-21-13 LITEF GmbH Attitude and Heading Reference System Unit Model LCR-92, LCR-92S, and LCR-92H installed on, but not limited to, Sikorsky S-76, MD-900, Bell 412 helicopters, and Pilatus PC-12 airplanes.

96-22-12 Raytheon (Beech) 1900C, 1900D, and 2000 requires inspection fuel filter assemblies to detect bypass valves glued shut.

96-23-03 Textron Lycoming IO-320, LIO-320, AEIO-320, IO-360, LIO-360, AEIO-360, HIO-360, TO-360, IO-540, LIO-540, O-540-L, and AEIO-540 engines requires inspection of pump outlet gaskets and pump outlet ports.

now available through the FedWorld Bulletin Board System (BBS), via the Internet.

You may directly access the FedWorld BBS at telephone number (703) 321-3339. To access this publication through the Internet, use the following address.

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Beginning July 1996, we are using the Adobe Acrobat software program format to upload this monthly publication. This change is necessary to include the illustrations which are associated with various articles. The file names will still begin with "ALT", followed by three characters for the month, followed by two digits for the year; however, the extension will be "PDF" (e.g. "ALTJUL96.PDF"). The extension "PDF" indicates it will be necessary to download the files for viewing. The Adobe Acrobat Viewer is available for download from the Internet (free of charge) and will allow the files to be read.

You may still access the "TXT" extension for issues of this publication prior to July 1996.

Also, available at this address are the Service Difficulty Reports which may be of interest.

The Regulatory Support Division (AFS-600) has established a "HomePage" on the Internet, through which the same information is available. The address for the AFS-600 "HomePage" is:

<http://www.mmac.jccbi.gov/afs/afs600>

ALERTS ON LINE

We have received several requests to make the information contained in AC 43-16, General Aviation Airworthiness Alerts, available electronically. Therefore, this publication is

Also, this address has a large quantity of other information available. There are "hot buttons" to take you to other locations and sites where FAA Flight Standards Service information is available. If you have any questions, our "E-mail" address follows.

Other requests have been received indicating a need to make the staff of this publication more available to our readers. To provide greater and more flexible access for you to offer information and ask questions, you may contact us by using any of the following methods.

Editor: Phil Lomax, AFS-640

Telephone Number: (405) 954-6487

FAX Number: (405) 954-4570 or
(405) 954-4748

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ga-alerts@mmacmail.jccbi.gov

Mailing Address:

FAA

ATTN: AFS-640 (Phil Lomax)

P.O. Box 25082

Oklahoma City, OK 73125-5029

We hope this will allow you to contact us by a means which will be convenient and save some of your time. We welcome the submission of aircraft maintenance information via any form or format. This publication provides an opportunity for you to inform the general aviation community of the problems you have encountered. The Service Difficulty Reporting (SDR) program also brings the problems to the attention of those who are able to resolve the problems. Your participation in the SDR program is vital so accurate maintenance information is available to the general aviation community.

HAPPY HOLIDAYS

REFLECTIONS AND PROJECTIONS

As we approach the end of another productive year, let us reflect on the events of the past and look, with enthusiastic optimism, to the future. May the experiences of the past year guide us to decisions which will increase aviation safety in the years to come.

Over the past year, it has been our privilege to provide the aviation community with this media for disseminating your aviation experiences. The intent is to create a safer aviation environment through the interchange of information. With your input and help, this publication (in its present form) has existed since August 1978. Since that time, there have been many changes in aviation. Some of the changes may not have been good; however, when all changes are considered aviation has taken great strides forward. Many of the innovations and advancements have taken place because one person had an idea or wondered how something could be done better.

As we ponder and project the future of aviation, we have visions of great changes to come which now are only a glimmer in someone's mind. So, it is with august anticipation we look to see what each new day will present. Challenges and problems are met with solutions and changes.

The staff of the FAA's Maintenance Support Branch (AFS-640) would like to take this opportunity to wish all our readers and the entire aviation community a very happy, prosperous, and safe holiday season.

**MERRY CHRISTMAS AND
HAPPY NEW YEAR!**

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		1. A/C Reg. No. H-					
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3. POWERPLANT							
4. PROPELLER							
5. SPECIFIC PART (of component) CAUSING TROUBLE							
Part Name	MFG. Model or Part No.	Serial No.	Part/Defect Location				
6. APPLIANCE/COMPONENT (Assembly that includes part)							
Comp/Appl Name	Manufacturer	Model or Part No.	Serial Number				
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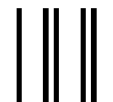
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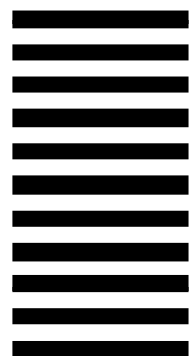


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